

for others. A certain new limousine in the hands of an equally new driver overturned on the highway, and the insurance company was asked to exchange the purchase price for the wreck because of a high wind.

The Weather Bureau gained a friend in the insurance adjuster and a new acquaintance in the automobile owner by showing that the highest wind record in the State would have exerted but one-half the pressure against the side of the car that it was admitted to have carried on its tires.

THE WEATHER OF 1923.

By ALFRED J. HENRY.

Precipitation.—Continental United States as a single geographic unit received slightly more than the average precipitation, area alone considered. See the chart of annual deviation from the normal. The districts having a pronounced deficit are the Pacific Coast States, including Idaho, the Lake region and Atlantic Coast States, including the Florida Peninsula. More than the normal precipitation was recorded in the great grazing areas of the West, including the Plains States; also in the Gulf States, Tennessee, and the Ohio Valley. Numerical values of the monthly and annual deviation are given in Table No. 1. Computing the mean deviation for the

To enumerate or even indicate the avenues into which the records in the custody of the Weather Bureau may flow continually or occasionally would be as great a task as to list the places visited by the wind, or shone upon by the sun, or wet by summer showers, or draped by winter snows. It should suffice merely to indicate that this impersonal and impartial arm of the Government is always ready, and usually competent, to lift some individual or business over a hard place and to steady the scales of justice within and outside of the public courts.

United States as a whole the result comes out a negative quantity—2.2 inches. This is explained as due to the magnitude of the deviation in two small districts—Florida Peninsula on the Atlantic (−17.8 inches) and the Middle Pacific coast (13.6 inches).

The outstanding feature of the year as regards precipitation is the heavy rains in the Arkansas Valley in southeastern Kansas in June and in Oklahoma and adjoining States in September and October. Destructive floods occurred in both southeastern Kansas and in Oklahoma.

TABLE 1.—*Precipitation departures, 1923.*

Sections.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Accumulated departure.
New England.....	+2.1	−1.8	−0.5	+1.4	−1.9	−0.4	−0.6	−2.0	−1.2	+0.3	−0.1	+0.7	−4.0
Middle Atlantic States.....	+0.6	−0.8	+0.3	+0.1	−1.5	−1.3	−0.2	−1.6	+0.4	−0.7	−0.8	−0.1	−5.4
South Atlantic States.....	−0.9	−1.2	−0.6	−0.8	+0.8	−1.9	+0.4	−0.9	−1.0	−1.8	−0.9	−0.4	−9.2
Florida Peninsula.....	−2.2	−2.3	−1.6	−0.6	+3.4	−1.7	−2.1	−1.7	−2.0	−3.6	−1.8	−1.6	−17.8
East Gulf States.....	−1.5	+0.8	+0.2	+1.9	+5.1	+0.9	+0.6	+0.8	−2.4	+0.5	+0.8	+0.4	+8.1
West Gulf States.....	+0.5	+1.4	+0.2	+0.9	−0.3	−1.1	−0.1	−0.7	+2.1	+0.4	0.0	+3.0	+6.3
Ohio Valley and Tennessee.....	+0.9	−0.2	+0.1	+0.4	+0.2	+0.4	−0.2	+1.0	−0.1	−1.0	−0.6	+2.4	+3.3
Lower Lake region.....	+0.1	−1.0	−0.3	−0.3	−0.1	−0.7	−1.4	−0.8	0.0	−0.7	−0.5	+0.8	−4.9
Upper Lake region.....	−0.4	−0.6	+0.4	−0.6	−1.0	−0.8	+0.3	−0.3	+0.1	−0.2	−1.4	−0.2	−4.7
North Dakota.....	−0.2	0.0	−0.5	−0.2	−1.2	+0.3	−0.3	−0.6	+0.7	−0.4	−0.3	−0.3	−3.0
Upper Mississippi Valley.....	−0.2	−0.9	+1.2	−0.8	−1.1	−0.3	−1.9	+0.8	+0.9	−0.4	−0.3	+0.1	−3.4
Missouri Valley.....	−0.2	−0.7	+0.2	−0.4	−1.0	+1.2	−1.0	+0.7	+2.2	+0.4	−0.3	−0.1	+1.0
Northern slope.....	−0.3	−0.3	−0.3	0.0	+0.1	+0.8	+0.9	+0.5	+1.1	+0.9	−0.3	−0.2	+2.9
Middle slope.....	−0.2	−0.4	0.0	−0.2	+0.9	+2.3	−0.6	+0.4	+1.6	+3.0	0.0	0.0	+6.8
Southern slope.....	+0.4	+1.1	+1.0	+1.2	−2.0	+1.5	−0.7	−1.3	+1.4	+3.8	+1.2	+0.6	+8.2
Southern Plateau.....	−0.5	−0.2	+0.1	+0.1	−0.1	−0.3	−0.5	0.0	0.0	+0.1	+0.4	+0.4	−0.5
Middle Plateau.....	+0.2	−0.7	−0.4	+0.2	−0.4	+0.4	−0.1	+0.5	+0.2	−0.1	−0.2	−0.4	−0.8
Northern Plateau.....	−0.1	−0.5	−0.9	+0.1	−0.4	+1.2	+0.3	+0.4	−0.4	+1.0	−0.5	−0.2	0.0
North Pacific coast region.....	+2.3	−1.8	−2.1	−1.2	−0.7	−1.1	+0.5	+0.4	−1.0	−1.4	−3.7	0.0	−9.8
Middle Pacific coast region.....	−2.0	−3.3	−3.7	+0.7	−0.9	+0.3	0.0	0.0	+0.7	−0.6	−2.7	−2.7	−13.6
South Pacific coast region.....	−0.6	−1.4	−2.4	+1.8	−0.6	0.0	0.0	0.0	+0.2	−0.6	−1.1	−1.3	−5.8
United States as a whole.....													−2.2

Temperature.—For the country as a whole the year was a warm one, thus completing a period of three consecutive warm years, in two of which the warm weather was more pronounced than in the year just closed. The latter was not characterized by periods of unduly warm or cold weather respectively, although January was uniformly warm for a winter month in all parts of the country. June was a rather warm summer month, being characterized, in the East, by a rather large number of consecutive days with high day temperature, but the two summer months immediately following were, on the whole, agreeable months, the periods of high and low temperature alternating in such a manner as to prevent long continued spells of high day temperatures.

August was unusual in respect of movement of marked anticyclones into the Missouri Valley from the Canadian Northwest and these were naturally associated with abnormally cool weather for the season.

In some quarters such a movement is held to be indicative of the early approach of cool weather; in this case, however, the promise failed to materialize, the months of November and December being unusually warm. The numerical values of the variations from normal by districts are given in Table 2 and geographically by the chart on the reverse side of the precipitation chart.

A. J. H. I. Annual Temperature Departures (°F.) in the United States, 1923.



Shaded portions show excess (+)
Unshaded portions show deficiency (-)

A. J. H. II. Annual Precipitation Departures (inches) in the United States, 1923.



Shaded portions show excess (+).
Unshaded portions show deficiency (-).

TABLE 2.— *Temperature departures, 1923.*

Sections.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Average monthly departure.
New England.....	-2.1	-6.2	-3.7	-0.1	-0.9	+1.5	-2.2	-1.7	+1.1	+0.9	+1.9	+7.1	-0.4
Middle Atlantic States.....	+1.7	-3.4	+0.4	+0.1	-1.4	+2.7	-1.1	-0.9	+1.3	-0.9	+0.1	+8.0	+0.6
South Atlantic States.....	+4.0	-1.6	+2.1	-0.3	-2.2	+0.1	-1.1	+0.9	+1.7	-1.3	-2.0	+6.4	+0.6
Florida Peninsula.....	+1.8	+1.5	+2.8	+1.6	-1.5	-0.6	-0.7	-0.2	-0.4	-1.5	-3.2	+3.4	+0.2
East Gulf States.....	+6.7	-1.0	-0.5	+0.2	-2.0	-0.9	-1.9	-0.2	+2.0	-1.1	-1.7	+6.7	+0.5
West Gulf States.....	+10.2	-1.2	-3.3	+0.4	-0.2	+0.9	+0.3	+2.0	+0.9	-1.7	-0.6	+4.3	+1.0
Ohio Valley and Tennessee.....	+5.9	-3.6	-1.0	-1.0	-2.2	+0.5	-0.4	-0.3	+0.8	-1.7	+0.6	+9.0	+0.6
Lower Lake region.....	+0.8	-4.3	-2.2	-1.4	-3.7	+1.7	-0.8	-1.7	+0.4	-1.6	+1.2	+8.6	-0.2
Upper Lake region.....	+2.7	-4.9	-5.4	-1.5	-1.3	+3.1	+0.8	-2.2	+0.2	-0.6	+3.9	+8.8	+0.3
North Dakota.....	+5.9	-2.8	-4.3	-1.0	+1.0	+3.6	+3.6	-2.3	+2.7	+1.2	+10.6	+11.2	+2.4
Upper Mississippi Valley.....	+7.8	-3.5	-4.4	-1.0	-1.0	+1.9	+2.3	-0.8	-0.3	-2.9	+3.4	+9.9	+1.0
Missouri Valley.....	+11.1	-0.1	-2.3	+0.2	-1.3	+0.7	+2.2	-0.1	+1.5	-2.2	+5.5	+7.6	+1.9
Northern slope.....	+7.8	-3.1	-1.2	-0.9	0.0	0.0	+3.0	-0.9	+1.0	-2.5	+4.3	+1.3	+0.7
Middle slope.....	+10.9	-1.1	-3.4	-0.1	-2.1	+0.1	+1.5	+0.9	+0.3	-5.0	+2.9	+2.4	+0.6
Southern slope.....	+9.7	-0.8	-3.5	0.0	+0.4	+0.7	+0.7	+1.5	+1.4	-3.2	-0.4	-2.4	+0.3
Southern Plateau.....	+4.6	-1.4	-2.7	-1.0	+1.5	-2.8	-0.1	-1.0	-1.2	-2.4	+0.6	-1.1	-0.6
Middle Plateau.....	+4.8	-5.2	-3.4	-2.0	+1.2	-3.6	+2.0	-1.3	-0.1	-2.9	+1.4	-2.3	-1.0
Northern Plateau.....	+6.2	-5.2	-0.3	-0.2	-0.3	-3.2	+2.6	+1.0	+2.6	-0.2	+2.1	-0.2	+0.4
North Pacific coast region.....	+1.6	-2.6	-0.1	+1.7	+0.1	+0.8	+1.4	+2.8	+2.2	+2.8	+3.4	+0.3	+1.2
Middle Pacific coast region.....	-1.6	0.0	+1.3	-0.2	-0.4	-2.8	+0.7	+1.2	+2.8	+0.1	+4.2	-1.2	+0.3
South Pacific coast region.....	+2.2	+0.6	+2.4	-0.5	+1.4	-3.0	-0.6	-0.8	+2.2	+1.5	+4.9	+0.8	+0.9
United States as a whole.....													+0.5

The excess of temperature in the last quarter of the year seems to be rather definitely tied up with low pressure in the Arctic and, moreover, it also seems to be rather clearly indicated that when pressure in high lati-

tudes in the North American Continent and Asia is low, the prevailing drift of the atmosphere over Canada and the United States is from west to east with few and unimportant exchanges of polar and equatorial air and vice versa.

TROPICAL DISTURBANCES DURING THE HURRICANE SEASON OF 1923.

By W. P. DAY.

The word "hurricane" comes from a Carib word meaning "a high wind." But meteorologically it is now associated with the small, intense cyclones which occur in this region and are responsible for the really destructive winds. Fortunately, a great many tropical disturbances do not develop these characteristics; but it is often difficult to decide from available reports whether any particular disturbance originating over warm waters carries with it the central core of low barometer, which writes a typical hurricane trace on the barograph.

The first disturbance showing characteristics of a hurricane was noted on the morning of September 5 near latitude 36° N. and longitude 61° W., the S. S. *Evergreen City* reporting a pressure of 29.32 inches with force 10 (Beaufort wind scale) from the northeast. The storm appeared to be of small diameter, forming a small part of a larger depression or trough of low pressure extending northeast from Bermuda. Previously a rather ill-defined depression had been traced as it recurved around Bermuda; but it was not until the 5th that either low barometer or high wind was detected. Meanwhile, a high-pressure area had obtruded itself into the path of the storm and its direction of motion was changed from northeast to north-northwest and greatly retarded. The center of the storm was again noted on the morning of the 9th as it crossed the steamer lanes near latitude 41° N and longitude 58° 30' W, the S. S. *Emergency Aid* recording a pressure of 29.20 inches at 3 p. m. with a wind force of 10 from the south. The storm was now under the influence of a low moving along the northern border and, being caught in its attendant upper currents, was carried rapidly north-northeast, but with diminishing intensity over, the colder waters of the Labrador Current.

The next disturbance also developed north of the Tropics but well within the Gulf Stream, and was first noted to be of hurricane intensity when the S. S. *Emergency Aid*, which had encountered the previous storm farther northeast, recorded a pressure of 29.42 inches and winds as high as force 11, on the morning of September 12, near latitude 36° N. and longitude 64° 30' W. This storm was carried northeast much more rapidly than the preceding one and by 4 p. m. was near latitude 42° N. and longitude 60° W., the S. S. *City of St. Joseph* recording a pressure of 29.11 inches and wind force 12 from the northwest. Like its predecessor, it showed a marked loss of intensity upon striking colder water and there was but little indication of it on the following morning.

During September 23 unsettled conditions were noted to the southeast of Turks Island, the barometer falling slowly and wind shifts indicating the presence of a disturbance, which was more definitely located on the morning of the 25th, when the S. S. *Tulsa* reported a wind force of 10 from the northeast, pressure 29.86 inches, in latitude 23° 40' N and longitude 74° W. The storm was moving northwest at this time and passed just east of Nassau, Bahamas, on the 26th, the morning barometer reading 29.54 inches and wind 40 m. p. h. from the northwest. However, a large high-pressure area was now blocking its forward motion and the storm, though not diverted from its recurve to the northeast, showed very little movement during the next two or three days, but gradually increased its area of influence and its intensity with winds of gale force over a large area and wind force as high as 11 reported by vessels which approached its center. It was not until the morning of the 29th that the eastward movement of